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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,017	01/04/2002	Mischa Megens	I-10-5	8821

7590 06/03/2005

Docket Administrator (Room 3J-219)  
Lucent Technologies Inc.  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/040,017	<b>Applicant(s)</b> MEGENS ET AL.	
	<b>Examiner</b> Martin J Angebrannt	<b>Art Unit</b> 1756	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/3/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed. The correction to figure 7 is approved. Rejection of the previous office action not repeated below are withdrawn based upon the arguments of the applicant and the amendments to the claims.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10,14,16,18 and 20 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Turberfield, "Photonic Crystals made by Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001).

Turberfield, "Photonic Crystals made by Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001) teaches the use of an Epoxy based resist EPON SU8, with a triarylsulfonium salt as the photoinitiator/photoacid generator. The resist is coated on a substrate, heated to remove the solvent, exposed to four beams. "absorption of the UV photon by the molecule of PAG liberates a hydrogen ion; acid catalyzed polymerization occurs when the film is heated in a post-

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exposure bake". The photonic crystal structure is revealed by development using propylene glycol methylether acetate in an ultrasonic bath. (page 633, right column). The formation of full connected polymer and air void lattices is disclosed. (page 634, center column). The filling of the resultant structure with titania is disclosed. (page 635, left column). The use of three beam exposure is disclosed. (page 625, left column).

The statement that the polymerization does not occur until the post-exposure bake is held to meet the requirement that the exposure take place at a temperature at which refractive index changes do not occur. The examiner notes that room temperature is 25 degrees C and the specification describes temperatures below 65 degrees C as meeting this limitation in section [0044, prepub]. The viscosity post baking is held to meet the rubber-like phase limitation of claim 9.

The applicant describes the use of epoxy resins EPON-SU-8 in section [0039] of the prepub together with the use of photoacid generators to render the composition photosensitive. [0041-0043]. The reference does not specify any temperature during the exposure process and therefore no heating or cooling is assumed. The examiner notes that room temperature is 25 degree C and the instant specification describes temperatures below 65 degrees C as inhibiting refractive index changes. [0044]. Therefore the exposure process of the claims is inherently met merely by the room temperature exposure of the reference. The post bake treatment is specifically described as liberating the hydrogen ions and facilitating acid catalyzed polymerization, which is almost parroted by the language appearing in sections [0045-0048]. The argued position entirely neglects the facts presented in the instant specification, specifically

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relating to the use of the EPON SU-8 composition and therefore cannot be found persuasive.

The rejection stands.

5. Claims 1-10,14,16,18 and 20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Campbell, et al., "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature, Vol. 404. pp. 53-56 (03/2000).

Campbell, et al., "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature, Vol. 404. pp. 53-56 (03/2000) teach the use of an Epoxy based resist EPON SU8, with a triarylsulfonium salt as the photoinitiator/photoacid generator. The resist is coated on a substrate, heated to remove the solvent, exposed to four beams. "absorption of the UV photon by the molecule of PAG liberates a hydrogen ion; acid catalyzed polymerization occurs when the film is heated in a post-exposure bake". The photonic crystal structure is revealed by development using propylene glycol methylether acetate in an ultrasonic bath. (page 54). The formation of full connected polymer and air void lattices is disclosed. The filling of the resultant structure with titania is disclosed. (page 54, right column).

The statement that the polymerization does not occur until the post-exposure bake is held to meet the requirement that the exposure take place at a temperature at which refractive index changes do not occur. The examiner notes that room temperature is 25 degrees C and the specification describes temperatures below 65 degrees C as meeting this limitation in section [0044, prepub]. The viscosity post baking is held to meet the rubber-like phase limitation of claim 9.

The rejection stands for the reasons provided above as the same EPON SU-8 composition and onium photoacid generator is used as in Turberfield, "Photonic Crystals made by

Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001) and the same exposure at room temperature is assumed as no description of heating during the exposure process is described in the reference.

6. Claims 1-10, 14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **either** Campbell, et al., "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature, Vol. 404, pp. 53-56 (03/2000) **or** Turberfield, "Photonic Crystals made by Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001), in view of Liang et al. EP 408227.

Liang et al. EP 408227 teach the use of dye/onium salt complexes to extend the spectral response of photosensitive cationically curable compositions into the visible spectrum. (abstract, page 2/lines 25-39). Polymerizable materials include epoxies (page 5/line 4). The use of rose Bengal is disclosed. (pages 12-14). The use of triarylsulfonium salts as the onium portion of the complex is disclosed. (page 14/line 29-32)

It would have been obvious to one skilled in the art to modify the compositions and processes of **either** Campbell, et al., "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature, Vol. 404, pp. 53-56 (03/2000) **or** Turberfield, "Photonic Crystals made by Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001) which use sulfonium salts by using dye/onium complexes to extend the spectral response of these compositions as disclosed by Liang et al. EP 408227.

The rejection stands for the reasons above as no further arguments beyond those addressed above were directed at this rejection.

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7. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **either** Campbell, et al., "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature, Vol. 404. pp. 53-56 (03/2000) or Turberfield, "Photonic Crystals made by Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001), in view of Liang et al. EP 408227 and Endo et al. '898.

Endo et al. '898 teach the addition of amines to epoxy resins to facilitate their dissolution or dispersion in solvents. Useful neutralizing agents include triethylamine. (57/50-58/3)

In addition to the basis provided above it would have been obvious to modify the invention of **either** Campbell, et al., "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature, Vol. 404. pp. 53-56 (03/2000) or Turberfield, "Photonic Crystals made by Holographic Lithography, MRS Bull. Pp. 632-636 (08/2001) combined with Liang et al. EP 408227 by adding an amine, such as triethyl amine to facilitate the dissolution/dispersion of the epoxy resin as taught by Endo et al. '898.

While the Endo et al. '898 reference is not within the filed of holography, it is still concerns photosensitive resins and specifically is cited to teach the use of triethylamines to facilitate the dissolution of epoxy resins, which is relevant to the various known epoxy resins, such as EPON SU-8 and this advantage would be considered desirable to any practitioner using epoxy resins. The rejection stands.

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-18 are provisionally rejected under the judicially created doctrine of double patenting over claims 1,6 and 7 of copending Application No. 10321027. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: The development of the resist is considered an obvious extension of the process of the claims of the instant application.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The position of the applicant might be persuasive with respect to the limitation of claim 11, but the examiner holds that it would have been obvious to perform the exposure of claims 1,6 and 7 at room temperature due to its conventionality and convenience. The rejection stands.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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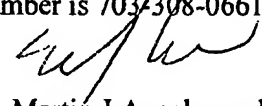
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Old line of rejection applied to newly added claims.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9309 for regular communications and 703-872-9309 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703/308-0661.

  
Martin J Angebrannndt  
Primary Examiner  
Art Unit 1756

